

Remarks:

Reconsideration of the application is requested.

Claims 1-2, 4, 10, 12, and 14-16 remain in the application.

Claims 1 and 14 have been amended. Claims 3, 5-9, 11, 13, and 17-23 have been cancelled.

In item 1 on pages 2-3 of the above-mentioned Office action, claims 1-4 and 10-16 have been rejected as being anticipated by Nishioka et al. (US Pat. No. 5,811,851) under 35 U.S.C. § 102(b).

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. More specifically, the alternative materials tantalum silicide nitride and tungsten silicide for the adhesion layer have been deleted.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

a base substrate at least partially composed of an insulating material and formed with at least one opening;

a barrier layer provided over said base substrate, said barrier layer including an oxygen-containing iridium layer and an oxygen barrier layer, said oxygen barrier

layer being composed of one of iridium dioxide and ruthenium dioxide;

an adhesion layer disposed between said base substrate and said at least one barrier layer, said adhesion layer containing at least one material selected from the group consisting of zirconium, hafnium, cerium, vanadium, chromium, and niobium; and

a metal silicide layer disposed on said base substrate directly between said adhesion layer and said opening, causing a layer stack of said metal silicide layer, said adhesion layer and said oxygen-containing barrier layer to be formed above said opening.

The invention of the instant application relates to a substrate of an insulating material in which an opening is formed and a stack formed by a metal silicon layer (9), an adhesion layer (20) and a barrier layer (25, 30). The adhesion layer (20) contains zirconium, hafnium, cerium, vanadium, chromium, or niobium. The barrier layer (25, 30) includes an oxygen-containing iridium layer (25) and an oxygen barrier layer (30).

Therefore, the stack according to the invention of the instant application has three layers in which the topmost layer (25, 30) is formed from two sub-layers.

The Examiner has stated that of Nishioka et al. disclose an adhesion layer 46 and a barrier layer 48 (see Figs. 7 and 8). At the same time, the Examiner has also interpreted the layer 46 as a metal silicon layer (see page 3, line 3 of the Office action) which is disposed on a base substrate 30 directly

between the adhesion layer 46 and an opening, forming a layer stack of a metal silicon layer 46, an adhesion layer 46, and an oxygen-containing barrier layer 48.

It is noted that the in the office action dated December 4, 2002, the Examiner has interpreted the layer 46 from Nishioka et al. as both a barrier layer and an adhesion layer (see the last paragraph on page 2 of the Office action). Now the Examiner interprets the layer 46 as an adhesion layer disposed between it self and a barrier layer.

In fact, Nishioka et al. primarily disclose a layer stack formed from a ruthenium layer 46 and a ruthenium oxide layer 48 (see, for example, column 46, lines 28-39). A number of other materials can be used as alternatives for those layers (see column 7, line 40 to column 8, line 16 for the ruthenium layer and column 8, lines 62-66 for the ruthenium oxide layer).

Applicants believe that it is improper for the Examiner to simply grab two materials from the numerous alternative materials for the layer 46 and assign them to several layers according to the invention of the instant application. Simply speaking, when a layer stack consists of a metal silicide layer and a zirconium layer, this layer stack would not be

suggested by an adhesion layer produces from zirconium or tungsten silicide.

Clearly, Nishioka et al. do not show "a barrier layer provided over said base substrate, said barrier layer including an oxygen-containing iridium layer and an oxygen barrier layer, said oxygen barrier layer being composed of one of iridium dioxide and ruthenium dioxide; an adhesion layer disposed between said base substrate and said at least one barrier layer, said adhesion layer containing at least one material selected from the group consisting of zirconium, hafnium, cerium, vanadium, chromium, and niobium; and a metal silicide layer disposed on said base substrate directly between said adhesion layer and said opening, causing a layer stack of said metal silicide layer, said adhesion layer and said oxygen-containing barrier layer to be formed above said opening", as recited in claim 1 of the instant application.

Claim 1 is, therefore, believed to be patentable over Nishioka et al. and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In item 2 on pages 3-4 of the above-mentioned Office action, claims 1-4 and 10-16 have been rejected as being anticipated

by Horii (US Pat. No. 2001/0052466 A1) under 35 U.S.C. § 102(e).

The Examiner also interpreted Horii in the same way as he interpreted Nishioka et al., namely assigning alternative materials for one layer to several layers. The Examiner has stated that in Horii a metal layer 20, which is disposed on a base substrate 30, is directly disposed between an adhesion layer 20 and an opening, so that a layer stack of a silicide layer 20, an adhesion layer 20 and an oxygen-containing layer 22 is formed (see the bottom on page 3 of the Office action).

However, in fact Horii does not disclose more than a layer stack of a metal silicide layer 20 which is disposed on a layer 22 of ruthenium or iridium.

Clearly, Horii does not show "a barrier layer provided over said base substrate, said barrier layer including an oxygen-containing iridium layer and an oxygen barrier layer, said oxygen barrier layer being composed of one of iridium dioxide and ruthenium dioxide; an adhesion layer disposed between said base substrate and said at least one barrier layer, said adhesion layer containing at least one material selected from the group consisting of zirconium, hafnium, cerium, vanadium, chromium, and niobium; and a metal silicide layer disposed on said base substrate directly between said adhesion layer and

said opening, causing a layer stack of said metal silicide layer, said adhesion layer and said oxygen-containing barrier layer to be formed above said opening", as recited in claim 1 of the instant application.

Claim 1 is, therefore, believed to be patentable over Horii and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In item 3 on page 4 of the above-mentioned Office action, claims 1-2, 4, 10, 12, and 14-16 have been rejected as being anticipated by Asano et al. (US Pat. No.6,407,422 B1) under 35 U.S.C. § 102(e).

Applicants respectfully notes that the reference Asano et al. has a United States filing date of **April 24, 2000**. See 35 U.S.C. § 102(e). As set forth in the Declaration of record, the instant application claims international priority of the German Application No. **199 58 200.9**, filed **December 2, 1999**, under 35 U.S.C. § 119. Pursuant to 35 U.S.C. §§ 119, Applicants are entitled to the priority date of the German application. See MPEP §§ 201.13 . Thus, the instant application predates the reference Asano et al. Because the reference Asano et al. was filed after the priority date of the instant application, Applicants respectfully believe that the reference Asano et al. is unavailable as prior art.

Applicants acknowledge that perfection of priority can only be obtained by filing a certified English translation of the German priority application. See 35 U.S.C. § 119. Applicants have filed a Claim for Priority including a certified copy of German application **199 58 200.9** on January 11, 2001. A certified English translation of German application **199 58 200.9** is enclosed herewith. Accordingly, Applicants respectfully believe that priority has been perfected and the reference Asano et al. is unavailable as prior art. Therefore, Applicants respectfully submit that the Section 102 rejection in item 3 on page 4 of the Office action is now moot.

In view of the foregoing, reconsideration and allowance of claims 1-2, 4, 10, 12, and 14-16 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the

Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



For Applicants

YHC:cgm

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